IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF: :

TAKAYUKI YAMAMOTO, ET AL. : EXAMINER: UHLIR, N.J.

SERIAL NO. 10/085,081 :

FILED: MARCH 1, 2002 : GROUP ART UNIT: 1773

FOR: METAL SHEET WITH
ANTICORROSIVE COATING

DECLARATION UNDER 37 C.F.R. § 1.132

ASSISTANT COMMISSIONER FOR PATENTS
ALEXANDRIA, VA 22313-1450

SIR:

I, Hiroo Shige, a citizen of Japan, hereby declare and state that:

1. I have a Master's degree in Engineering, which was conferred upon me in 1993 by Kyoto Institute of Technology located in Kyoto prefecture, Japan.

2. I have been employed by Kabushiki Kaisha Kobe Seiko Sho since 1993 and I have a total of 10 years of work and research experience in the field of surface processing and corrosion of metal sheet.

3. Corrosion experiments were carried out by me or under my direct supervision and control using the JASO-M609 test described in the specification pages 7-8.

4. The attached Figs. B-C compare the corrosion resistance provided by a conventional zinc rich paint, which contains metallic zinc powder but no metal rust inhibitor; another conventional paint, which contains no metallic zinc powder but contains, as a metal salt rust inhibitor, 6% of either magnesium phosphate or calcium phosphate; and the present invention, which combines metallic zinc powder and metal salt rust inhibitor.

5. Fig. B, which appeared in the Declaration Under 37 C.F.R. § 1.132 filed October 30, 2003, shows the variation in corrosion depth with paint film thickness in a corrosion test comparing a conventional zinc rich paint (including zinc but no metal salt rust inhibitor additive) and an anticorrosive paint coating of the present invention (including both zinc powder and metal salt rust inhibitor "additive type A"). The term "cycle" refers to the cycle described in the specification at page 8, line 2.

The "conventional zinc rich paint" (which corresponds in zinc content to Sample No. 2 of Table 1 in the specification at page 10) had a zinc content of 65% but no metal salt rust inhibitor.

The paint "with additives type A" of the present invention (which corresponds to Sample No. 1 of Table 1 in the specification at page 10) also had a zinc content of 65% and included as a metal salt rust inhibitor 5.83% of aluminum phosphomolybdate.

In Fig. B, the terms "CR", "GA45" and "GI60" refer to comparative samples uncoated by paint. The term "CR" refers to cold rolled steel sheet. The term "GA45" refers to hot dip galvanized steel sheet containing 45g/m^2 of zinc alloy plating. The term "GI60" refers to hot dip galvanized steel sheet containing 60g/m^2 of zinc plating.

Fig. B shows that conventional zinc rich paint provides no improvement in corrosion resistance relative to the unpainted samples, even when the paint film thickness is varied. In addition, Fig. B shows that corrosion depth decreases somewhat with paint film thickness for both the paint of the present invention and conventional zinc rich paint.

Fig. B also shows that for a given film thickness the paint of the present invention (combining zinc and metal salt rust inhibitor) provides a significant reduction in corrosion depth relative to conventional zinc rich paint (with no metal salt rust inhibitor).

6. Fig. C shows the variation in corrosion depth with paint film thickness in a corrosion test comparing a conventional paint (including no zinc powder and, as a metal salt rust inhibitor additive, 6% of either magnesium phosphate or calcium phosphate) and an anticorrosive paint coating of the present invention (including both zinc powder and metal salt rust inhibitor "additive type A"). The term "cycle" refers to the cycle described in the specification at page 8, line 2.

The paint "with additives type A" of the present invention (which corresponds to Sample No. 1 of Table 1 in the specification at page 10) had a zinc content of 65% and included as a metal salt rust inhibitor 5.83% of aluminum phosphomolybdate.

In Fig. C, the terms "CR", "GA45" and "GI60" refer to comparative samples uncoated by paint. The term "CR" refers to cold rolled steel sheet. The term "GA45" refers to hot dip galvanized steel sheet containing 45g/m^2 of zinc alloy plating. The term "GI60" refers to hot dip galvanized steel sheet containing 60g/m^2 of zinc plating.

Fig. C shows that conventional paint including no zinc powder and, as a metal salt rust inhibitor additive, 6% of either magnesium phosphate or calcium phosphate, provides no improvement in corrosion resistance relative to the unpainted samples.

Fig. C also shows that the paint of the present invention containing zinc and metal salt rust inhibitor provides a significant reduction in corrosion relative to conventional paint containing about the same amount of metal salt rust inhibitor but no zinc powder.

7. Together, Figs. B-C shows that the paint of the present invention combining zinc and metal salt rust inhibitor provides a significant synergistic reduction in corrosion relative to conventional zinc rich paint containing zinc but no metal salt rust inhibitor, and relative to conventional paint containing metal salt rust inhibitor but no zinc powder.

8. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

9. Further declarant saith not.

Date: December 27, 2004 /Hiroo Shige/

Hiroo SHIGE

Attachments: Figs. B-C

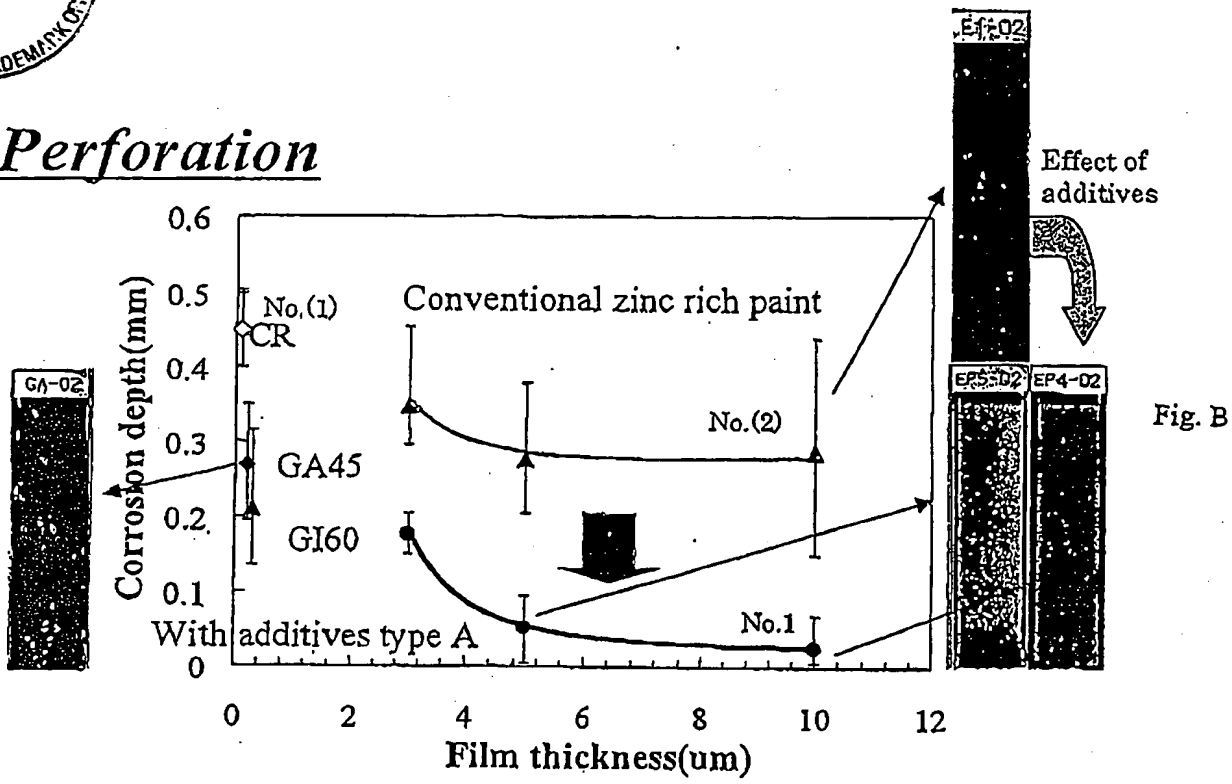

Fig. B

Maximum corrosion depth after 90cycles

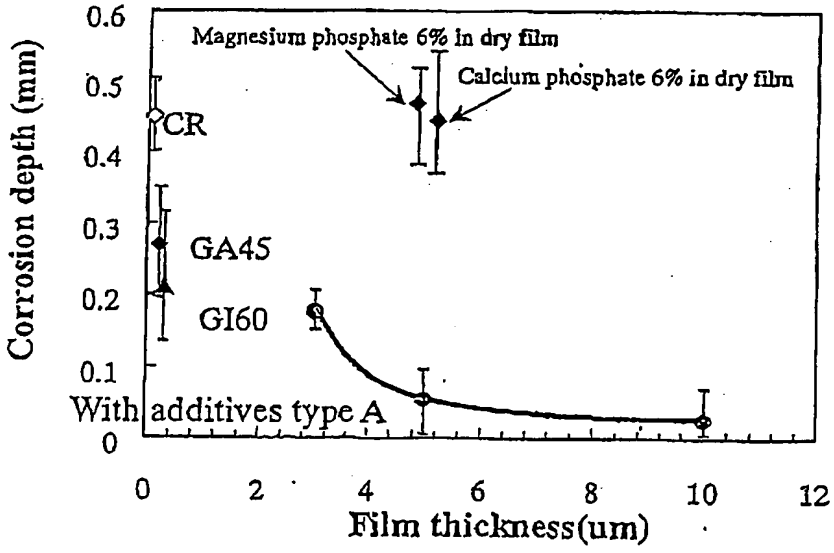

Fig. C

Maximum corrosion depth after 90 cycles